

THE SYSTEMATIC POSITION AND DISTRIBUTION OF *POA* *PIRINICA*

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ABSTRACT. A detailed description, and drawing, is given of the little-known Balkan *Poa pirinica* Stoj. & Acht. (Gramineae). Its affinities and distribution are discussed; it is now known to occur in Greece.

Poa pirinica was collected on August 24th, 1936, by Boris Achtarov on the summit of Eltepe, the principal peak of the Pirin Planina, Bulgaria, during an excursion of a group of botanists taking part in the 8th Geographical and Ethnographical Congress in Sofia. Although Achtarov initially identified it as *P. minor* Gaudin, after he and Professor Stojanov revisited the locality in 1938 and collected further material they described it as a new species.

While preparing the account of *Poa* for *Flora Europaea*, I wished to prepare a fresh description of this species and to determine its systematic position more accurately. Through the kind co-operation of the Botanical Institute of the Bulgarian Academy of Sciences, Sofia, I was able to examine three sheets of Stojanov and Achtarov's authentic material.

Further material became available as a result of a visit to northern Greece in July 1970 by Oleg Polunin, who collected a specimen of *Poa* from Mt Olympus which appeared to belong to sect. *Oreinos* A. & Gr. emend. Nannf. but which did not match the existing European members of the section as defined by Nannfeldt (1935). I came to the conclusion that Polunin's material matched *P. pirinica*, and that the species should be included in sect. *Oreinos*.

An additional specimen of *P. pirinica* came to light in the herbarium of the Natural History Museum, Vienna during my visit in August 1973. It had been collected as long ago as 1927 by Dr H. Handel-Mazzetti from approximately the same locality as Polunin's gathering, but had been incorrectly identified as *P. parnassi* Boiss. & Heldr. by A. von Hayek.

These records considerably extend the known geographical range of *P. pirinica*. The altitudinal range of the species, however, remains narrow; the upper limit approaches the summits of the mountains on which it grows (2916 m on the Pirin Planina, 2911 m on Mt Olympus), while the lowest levels from which the plant has been recorded are c. 2680 m on Mt Olympus and c. 2350 m on the Pirin Planina. The possibility exists that it may occur elsewhere in N Greece, SW Bulgaria or even in southernmost Yugoslavia, but few localities satisfy the altitudinal requirement of the species. A further restriction may also be imposed by its ecological preference for calcium-rich substrata; it grows on marble outcrops on the Pirin Planina, and on Mt Olympus the rocks of the summit zone are also calcareous.

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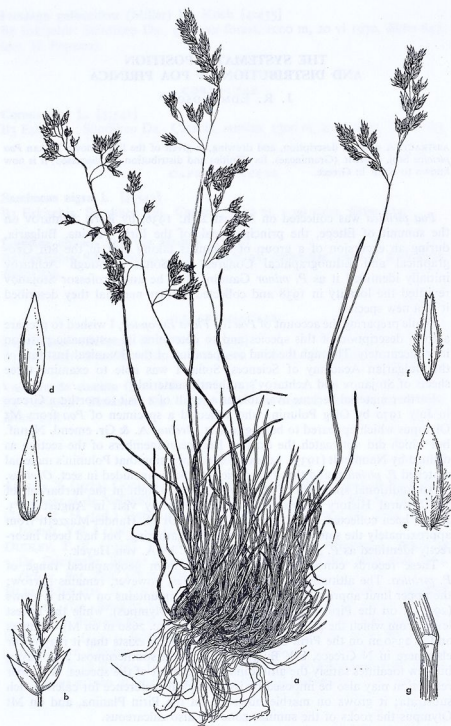


FIG. 1. *Poa pirinica* Stoj. & Acht.: a, habit; b, spikelet; c, lower glume; d, upper glume; e, lemma; f, palea; g, ligule. *Handel-Mazzetti*, 19 vii 1927. a $\times \frac{1}{4}$; b $\times 5$; c, d, e, f, g $\times 10$.

Poa pirinica Stoj. & Acht. in Mitt. Königl. Naturw. Inst. Sofia 12:181, fig. 1 (1939). Achtarov in Izv. Bulg. Bot. Druzh. 8:151 (1939). Kitanov & Penev in Jordanov (ed.), Flora R.P.B. 1:382, t. 35, fig. 5 (1963). Fig. 1.

Perennial, densely caespitose, lacking rhizomes and stolons. *Non-flowering shoots* present, but scarcely elongated; innovations extravaginal. *Flowering stems* 5–30 cm tall, terete, smooth; nodes tinged blackish-purple. *Leaves* mostly basal, blades rather stiff, (1.3–)2–5 cm long, 0.2–0.4 mm wide, strongly folded, narrowing abruptly at apex. *Ligule* c. 0.4–0.6 mm long, truncate. *Panicle* (1.8–)3–5.5(–6.5) cm long, elongate-ellipsoid to narrow, subspicate; branches erect, rather flexuous, terete, with relatively few spikelets. *Spikelets* 4.5–6 mm long, with 3–6 florets, strongly violet-tinged. *Glumes* lanceolate, subequal. *Lemma* lanate at base, hairy on keel and for c. $\frac{1}{2}$ length of marginal veins, hairs with acute apices. *Palea* subulate, keels sparsely long-ciliate for most of their length. *Fl.* July–August.

BULGARIA. Blagoevgrad: in saxosis et glareosis marmoreis, declivibus septentrionalibus ad Eltepe, Mt Pirin, c. 2900 m, 9 viii 1938, *N. Stojanov* s.n.! (SOM); in pascuis et glareis marmoreis Mt Pirin ad Bajovi Dupki, 9 viii 1939, *B. Achtarov* s.n.! (SOM).

GREECE. Thessalia/Makedhonia: Mt Olympus, in glareis declivium circa jugum Porta, substrato calceo, c. 2680 m, 19 vii 1927, *Handel-Mazzetti* s.n.! (W); Mt Olympus, summit, 2900 m, 27 vii 1970, *O. Polunin* 11059! (LTR).

P. pirinica shows a clear overall resemblance to the members of sect. *Oreinos*, and in particular to *P. minor* which appears to be its closest ally. Its systematic position in the section is nevertheless rather isolated. Typical characters of sect. *Oreinos* possessed by *P. pirinica* are as follows:

Plant of low stature, lacking rhizomes, with extravaginal innovations. Stem base slender. Leaves short; cauline leaves few in number. Stem smooth, terete. Panicle branches slender, smooth. Spikelets purple- or violet-tinged. Lemma hairy on keel and marginal veins, lanate at base.

The characters by which *P. pirinica* can be distinguished from the other European members of sect. *Oreinos* are listed in the following table:

	<i>P. flexuosa</i> Sm.	<i>P. laxa</i> Haenke	<i>P. pirinica</i> Stoj. & Acht.	<i>P. minor</i> Gaudin
Leaves:				
length	mostly basal	mostly basal	mostly basal	stem leafy
width	(1.2–)5–4 cm 1–2 mm	2–4.5 cm 0.8–1.5(–2.5) mm	(1.3–)2–5 cm 0.2–0.4 mm	1.5–4.5 cm 1–1.5(–2) mm
Ligule:				
apex	rounded	acute to truncate	truncate	subacute
length	2–3 mm	1–3 mm	0.4–0.6 mm	2–2.5 mm
Panicle branches	sulcate	sulcate	terete	terete
Hairs on lemma veins	acute	obtuse	acute	obtuse
Palea keels	aculeolate	aculeolate	sparsely long-ciliate	aculeolate

The very restricted distribution of *P. pirinica* confirms it as one of a small group of *Poa* species endemic to SE Europe, including the Balkans, which are of special interest in being only distantly related to the more widespread members of the genus. Two of these species, *P. stiriaca* Fritsch & Hayek ex Dörfner and *P. trichophylla* Heldr. & Sart. ex Boiss., have no close relatives; the third, *P. rehmannii* (Ascherson & Graebner) Wołoszcz., is the only known diploid member of the predominantly polyploid sect. *Stenopoa* Dumort. (Lungeanu, 1972). *P. stiriaca* and *P. trichophylla* are also diploid (Edmondson, 1975). It has not yet been possible to investigate *P. pirinica* karyologically.

P. rehmannii occurs in the southern Carpathian mountains, *P. stiriaca* has a scattered distribution extending from Austria and Czechoslovakia through Yugoslavia to W Romania, and *P. trichophylla* is confined to Mt Parnassos in Greece.

Kuzmanov (1969) distinguished two classes of endemic or near-endemic species of the Bulgarian mountain flora: "preglacial relicts", which survived the ice-ages on ice-free montane refugia, and "glacial relicts", the remnants of a boreal flora which migrated southwards during the last ice-age and subsequently became isolated in the montane regions of Bulgaria when the main body migrated northwards at the end of the glacial period. On the available evidence, *P. pirinica* appears to belong to the second group, along with the following taxa, *inter alia*, mentioned by Kuzmanov: *Carex pirinensis* Acht. (closely related to *C. atrata*), *Arenaria pirinica* Stoj., **Papaver degenii* (Urum. & Jáv.) Kuzm., *Potentilla apennina* Ten. subsp. *stoianovii* Urum. & Jáv., **Oxytropis urumovii* Jáv. and **Saxifraga ferdinandi-coburgii* Kell. & Sünd. It is notable that three of these species (asterisked) are closely associated with *P. pirinica* in the Pirin Planina, according to Stojanov & Achtarov (1939).

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